

San Diego DX Club Bulletin

March 2022



MEETING PROGRAM

Our presenter will be Ron Payne, WA6YOU, on The Art of QSL Collecting

MEETING NOTICE

The March, 2022 meeting of the SDDXC will be held on Wednesday, March 23rd at 6:30 P.M. PDST at Elijah's Restaurant at 7061 Clairemont Mesa Boulevard. Come early for social hour and dinner.

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From the Prez . . .

Miguel, KJ6YXI

SDDXC February Meeting Recording

The March, 2022 meeting of the SDDXC will be held in person on Wednesday, March 23rd at 6:30 P.M. PDST at Elijah's Restaurant at 7061 Clairemont Mesa Boulevard. Come early for social hour and dinner.

The meeting will also be carried live on ZOOM. (See below)

February, 2022 Meeting Recording:

https://us02web.zoom.us/rec/share/vRAuPqsTimgkrJQ_OZhpH9A7QHCV98dq_VYeogGgCOedWxBL4bMKJkVWVMeL_ODVIU.aUkhsr5fgOhm0jLc

SDDXC Meeting, March 2022

Time: Mar 23, 2022 06:30 PM Pacific Time (US and Canada)

Join Zoom Meeting

<https://us02web.zoom.us/j/88289470675?pwd=dnRuRkF6Q2dleXg3OUJDQXJaMDJwdz09>

Meeting ID: 882 8947 0675

Passcode: 607145

One tap mobile

+16699006833,,88289470675#,,,,*607145# US (San Jose)

+12532158782,,88289470675#,,,,*607145# US (Tacoma)

Dial by your location

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

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+1 312 626 6799 US (Chicago)

Meeting ID: 882 8947 0675

Passcode: 607145

Find your local number: <https://us02web.zoom.us/j/kewQYSnNAE>

Miguel, KJ6YXI



Secretary/Treasurer Reports

Randy, KQ6RS

SDDXC Meeting Minutes, February 22, 2022

February 2022 SDDXC Meeting Minutes

Our February meeting was held in person at Elijah's Restaurant and on Zoom. Twenty members attended (10 in person and 10 on Zoom). Our presenter, Carl Luetzelschwab, K9LA was our guest.

At 6:32 P.M. Tom Myrick, N6JOJ called the meeting to order.

From 6:37 to 7:36 P.M. Carl Luetzelschwab, K9LA gave a presentation on Solar cycle 25, followed by a question-and-answer session.

At 7:39 P.M. we held our round table.

At 8:03 P.M. the meeting was adjourned.

February 2022 Treasurer's Report

Income for January: \$60.00 for membership

Expenses for January: \$54 to STC Network Systems for web site hosting for 2022

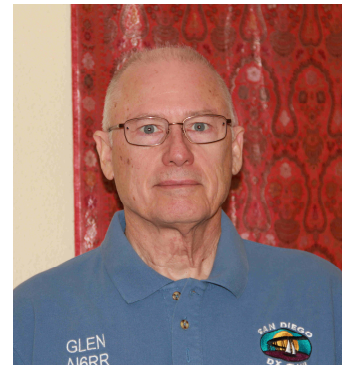
Balance on 3/9/2022 \$ \$6,475.49



Randy, KQ6RS

SDDXC DX STANDINGS

By Glenn, AI6RR



Standings are always available on the SDDXC website at
[San Diego DX Club \(sddxc.org\)](http://San Diego DX Club (sddxc.org))

By Glenn, AI6RR

SDDXC Contest Results

By John, K6AM



SDDXC RESULTS 2021 CQ WPX CW DX CONTEST

CLASS	CALL	SCORE	QSO'S	MLTS	FINISH
MS	NX6T (ops KI6RRN N6KI WQ6X WM6Y N6NC K4RB K7ENA)	5,649,391	2,421	1,009	#1 W6 #5 US
SO HP 40	NA6TT (N6CW)	2,430,864	1,252	612	#1 W6 #3 US
SO HP 40 (C)	K6AR	1,817,019	1,066	519	#2 W6 #5 US
SO LP	WN6K	346,320	658	312	#1 W6
SO LP	W6JBR	10,804	81	74	

By John, K6AM

From the Editor

The Unlikely Intersection of Antarctic Exploration, an Airline Tragedy and DX

By: Bob, K9RHY

Is this intersection a coincidence? Probably. An interesting coincidence? For sure.

News reports from February and March 2022 included two (2) very different reports that both referenced long distance radio communication – DXing.



HMS Endurance

At about 10,000 feet under the waters of the northernmost part of mainland Antarctica rests the HMS *Endurance*, a 144-foot-long wooden sailing ship with a history that reflects its name and that of its leader, Ernest Shackleton. On March 9, 2022 the **Falklands Maritime Heritage Trust** announced that it had finally located the wreck, which had been missing for over 106 years.

The *Endurance* was on a voyage of exploration through the Weddell Sea in 1915 when it became stuck in the ice, refusing to budge despite the best efforts of the crew. Shackleton was able to keep all his crew members alive through the winter conditions and finally reaching a whaling station that would

eventually help rescue the men he'd left in search of help.

The ship had been crushed by sea-ice and sank in 1915, forcing Shackleton and his men to escape on foot and in small boats.

Even though it has been sitting in 10,000ft of water for over a century, it looks just like it did on the November day it went down.

The name - *Endurance* - is clearly visible on the stern of the wreck (see cover photograph).



***Endurance* Stuck in the Antarctic Ice**



Source: Popular Mechanics



Source: Popular Mechanics

Endurance departed South Georgia for the Weddell Sea on 5 December, 1915 heading for Vahsel Bay. As the ship moved southward ice was encountered, which slowed progress. Deep in the Weddell Sea, conditions gradually grew worse until, on 19 January 1915, *Endurance* became frozen in an ice floe.

On 24 February, 1916 realizing that *Endurance* would be trapped until the following spring, Shackleton ordered her conversion to a winter station. She drifted slowly northward with the ice through the following months. When spring arrived in September 1916 the breaking ice put extreme pressures on the ship's hull. Until this point, Shackleton had hoped that the ship, when released from



Shackleton after the loss of Endurance

the ice, could work her way back towards Vahsel Bay. On 24 October, water began pouring in. After a few days, with the position at 69° 5' S, 51° 30' W, Shackleton gave the order to abandon ship, saying, "She's going down!"; and men, provisions and equipment were transferred to camps on the ice. On 21 November 1915, the wreck finally slipped beneath the surface.

For almost two months, Shackleton and his party camped on a large, flat floe, hoping that it would drift towards Paulet Island, approximately 250 miles away, where it was known that stores were cached. After failed attempts to march across the ice to this island, Shackleton decided to set up another more permanent camp (Patience Camp) on another floe, and trust to the drift of the ice to take them towards a safe landing. By 17 March, their ice camp was within 60 miles of Paulet Island; however, separated by impassable ice, they were unable to reach it. On 9 April, their ice floe broke into two, and Shackleton ordered the crew into the lifeboats and to head for the nearest land.

After five harrowing days at sea, the exhausted men landed their three lifeboats at Elephant Island, 346 miles (557 km) from where the *Endurance* sank. This was the first time they had stood on solid ground for 497 days. Shackleton's concern for his men was such that he gave his mittens to photographer Frank Hurley, who had lost his during the boat journey. Shackleton suffered frostbitten fingers as a result.

On 9 March 2022, it was announced that the *Endurance* had been located 4 miles (6.4 km) from the location where it was lost, 10,000 feet below the surface.

I took the following essay from Sir Ernst Shackleton's ***Trans Antarctic Expedition of 1914***.

"There are many well written and dramatic books that tell of this expedition and describe all the trials that Shackleton and the *Endurance's* crew suffered before they made it back alive. Very briefly, Shackleton wanted to do something really spectacular and so he barely scraped together enough money, two ships and equipment to enable him to sail to Antarctica where he and a "trekking party" would get off and cross the Antarctic continent one way, in record time and in relative comfort and safety. Things fell apart when the ice failed to break up as expected that summer and the *Endurance* got stuck and finally crushed by the ice later during the Antarctic



winter. Fortunately, the sinking of the little ship was slow enough that the life-boats and all the survival gear was able to be unloaded. Fortunate too was the presence of the ship's carpenter, Harry McNish who was able to construct shelters and equipment that enabled the men to survive out on the ice.

After the 'Endurance' was gone and when the ice pack started the summer break up, the small boats (modified by McNish for the open sea) were launched and a highly dramatic and dangerous voyage was made to deserted Elephant Island where they landed with much difficulty on that dangerous shore. Once safely on Elephant Island, Shackleton knew there would be no rescue because nobody knew they were down there and so they had to fit out one of the boats for a long and difficult and dangerous voyage to the wrong side of South Georgia Island where they would somehow have to cross the mountains to a whaling station on the other side for rescue."

Upon doing some research on this, I learned that Shackleton's Trans Antarctic Expedition actually consisted of two parts: Shackleton and his trekking party aboard the *Endurance* was to be landed at one side of the continent and a second party aboard the SY *Aurora* was to land at the opposite side. This second party was to establish supply depots for the "returning" trekking party as close to the pole as they could get them. For some reason, the heroic work that these men accomplished and the great efforts and sacrifice they made has never been part of the Shackleton story although it should be. In that half of the expedition, three men died, but few know or appreciate that. Another thing I learned about this half of the expedition is that they had a complete radio set, including both a receiver and a transmitter, and this gear had already proven itself during an earlier polar expedition under Dr. Douglas Mawson.

This new knowledge started me to thinking; why would one half of a well-equipped expedition be without, what was by then, standard shipboard equipment? You may already know that the RMS *Titanic* sank two years earlier (1912) and with great loss of life, but around 750 lives were saved thanks to the efforts of Chief Radioman Jack Phillips (who died) and Assistant Radioman Harold Bride (who survived). Even as early as 1910, it was very common for even small ships to have radio equipment aboard and soon after the *Titanic* disaster, international rules required all seagoing vessels to have radio receivers and to listen for distress calls at 500 KHz at the top of every hour.

Shackleton's *Endurance* did indeed have a receiver, but a transmitter was considered too expensive and so one was not included in the expedition's gear. There can be no doubt that Shackleton knew that the *Endurance's* voyage would be fraught with extreme danger, so to my way of thinking, it was extraordinarily irresponsible of Shackleton not to have had a two-way radio set and a trained radio operator on board and I am having a very hard time understanding how he could have overlooked this. As far as being too expensive, I can't believe that the Marconi company (among others) wouldn't have donated a small transmitter or that one of the scientists couldn't have built one from parts available in England.

Objections regarding the need for radio gear

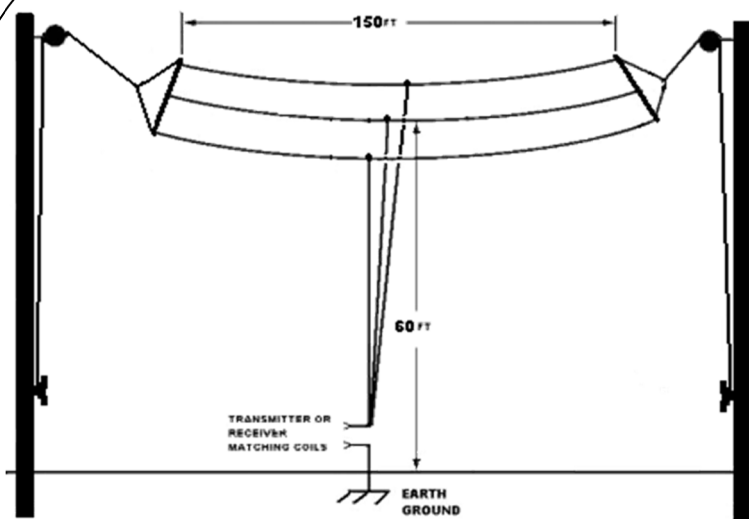
Objections have been raised that even if they would have had a radio, nobody in that part of the world would have heard their calls for help. Well, first of all, the *Aurora* was down there, and she had a radio set. Not only that, but all ships were also required to be equipped with radios and were required to listen at the top of each hour for distress messages. I can't believe that some ship somewhere wouldn't have heard them and relayed the messages to a port somewhere. I simply can't imagine that the whaling station on South Georgia would not have had an operating radio station. At this time in history, radio stations on shore were in common use so that the station could check on the arrival of whaling ships into port, listen for distress calls and for communicating with their headquarters (via landline telegraph relayed through ports in South America).

The other objection typically expressed is that nobody could have gotten a ship down to *Endurance* anyway. That, of course is true - at first, but as mentioned, a ship could have been waiting for them as they drifted north and west at the time the ice pack started breaking up. At the very least, a ship could have been waiting at Elephant Island. Now, if a ship could not have made it down before Shackleton's crew was forced to land at Elephant Island, they all could simply have stayed put until a ship could get down there (as most of the men did anyway) and that very risky voyage to South Georgia Island and that terrible trek across the mountains and glaciers to the whaling station would not have been necessary.

There were other objections. First, this expedition left England just as the Great War (WW I) began and trained radio operators were not readily available as ordinary seamen or even scientists. Trained radio operators were in great demand and were well paid professionals. It would have been extremely difficult to recruit one of these operators and ask him/her to sacrifice a couple of years of his/her career for very little pay. The other objection is the question of how to rig up the huge antennas (called aerials at the time) that were currently in vogue. The Marconi top loaded 'T' antenna system consisted of a very tall array of three to four wires suspended between two insulated spreaders and multiple feed wires running down from the centers to the transmitting station. To erect an antenna of this sort takes at least two very tall masts that must be stepped properly and guyed in place. Of course, a long-wire 1/4 wave sloping antenna would work well, but somehow everybody thought that you had to use a Marconi style antenna.

The illustration on the left side of the following page shows a typical must-have Marconi antenna. The second illustration is of *Endurance* stuck in the ice during the dark polar night. If you look at the top of the foremast, you will see the wires and spreader of a classic Marconi top loaded antenna.

The ship had everything there for radio communications except a transmitter and somebody who knew how to use it.



Not wishing to recreate the *Endeavor's* demise, In 1923, Donald B. MacMillan, leader of the **MacMillan Arctic Expedition of 1923** turned to the ARRL for help in outfitting his expedition with better wireless gear, and, as Michael Marinaro, WN1M, explained in his June 2014 *QST* article, "**Polar Exploration**," that help "was enthusiastically provided. Hiram Percy Maxim and the Board agreed to furnish support as well as recruit an expert operator to accompany the expedition. Donald H. Mix, 1TS, of Bristol, Connecticut was chosen for the task."

(Your Editor vividly recalls many of the articles written for *QST* later in Mix's life that referenced his love for DXing and his service as radio operator on the *Bowdoin*, an Arctic research vessel. See the **SDDXC Bulletin**, February, 2015 for a description of the *Bowdoin's* and Mix's adventure.)

(BTW) Your editor's all-time favorite W1TS *QST* article was titled "Ivory Tower Confessions" in which Mix wrote about DXing with a dipole. (July 1959 *QST*.)

League Board member M.B. West custom designed the equipment, which was built by radio amateurs at his firm, Zenith Electronics. The transmitter operated on medium-wave frequencies with a power of 100 W and used the call sign WNP — for "Wireless North Pole." As Marinaro explained in his article, with Mix as the ship's radio operator, "WNP transmitted weekly 500-word press releases and listings of stations worked and heard. Once received by amateur stations, these reports were delivered to local affiliated newspapers of the North American Newspaper Alliance; from there, they were distributed syndicate-wide by telegraph."

In 1925 the *Bowdoin* headed to Greenland. "The outstanding accomplishment of the expedition was in the sphere of radio," Marinaro wrote. "Utilizing short waves, the expedition was in consistent contact with the outside world throughout the journey, to the delight of the amateurs who were able to work them. The phenomenal success proved to the Navy those short waves were definitely superior to the long and ultra-long waves on which the fleets had been relying."

Finding MH370

At about the same time as the announcement of the discovery of the remains of the *Endeavor* earlier this month, news accounts began to emerge about the crash location of MH370 that differed dramatically from that used by the 1st search teams. The part of the story that stirred my interest was that the new crash site had been pinpointed by ham radio and DXers with an interest in the tragedy.

WOW!

I ran outside to see if my beam was pointed in the right direction to validate the findings, but my BS detector kicked in and prompted me to do some further research. I first thought about the role Radar might have played in the search. But knowing that radar uses power levels measured in the hundreds of KW coupled with very directional antennas splashed cold water on the radar theory. I had to read more.

There are countless theories about the disappearance of MH370. These theories range from the outlandish (mass abduction by aliens and flying into the Bermuda Triangle) to more plausible speculations about mass murder/suicide and pilot Captain Zaharie Ahmad Shah's politics.

My interest was further piqued as a past Malaysian Airways passenger and having flown similar paths over this desolate region of the southern Indian Ocean between Japan and/or, Singapore and Australia many times.

As it turns out, radar (and traditional ham modes – CW and SSB) weren't parts of the search equation. Rather, the principal mode employed was WSPR operating in the 14 MHz band supplemented by Inmarsat satellite data further supplemented by WSPRnet data and the sophisticated GDTAAA tracking software using a technique now referred to as **bistatic radar**.



Richard Godfrey

A retired 71 year old British aerospace engineer named Richard Godfrey claims to have assembled the data required to precisely geolocate the crash site of MH370 on the sea bed some 1,200 miles west of Perth, Western Australia using this technology.

WSPR (Weak Signal Propagation), is a digital mode used by hams experimenting with weak signals and propagation is offering a new tool to confirm the location of MH370. WSPR frequencies in the HF bands are: 1.8366, 3.5686, 5.2872, 5.3647, 7.0386, 10.1387, 13.5539, 14.0956, 18.1046, 21.0946, 24.9246 and 28.1246 MHz, probing potential propagation paths with low-power transmissions. WSPR transmissions carry a station's callsign, Maidenhead grid locator, and transmitter power in dBm. WSPR software can decode signals with S/N as low as -28 dB in a 2500 Hz bandwidth. Stations with internet access automatically upload their reception reports to a central database called WSPRnet, which also includes a mapping facility.

To describe how WSPR can act as an OTH tracking protocol, imagine you had to hike across a prairie and every 2 minutes there were a bunch of tripwires that you could not see, that set off an alarm or put another way imagine you broke into a high-security bank and to reach the vault you had to cross a room full of laser beams that you could not see and any one interruption of a laser beam would set off an alarm (think of Tom Cruise in a **Mission Impossible** movie). Now think of the WSPR paths from their origin to their destination as those tripwires.

Well, that is what aircraft do – they trip off invisible radio waves and Richard Godfrey, who is one of the leading experts in the hunt for MH370, has concluded a new study which finds that MH370 tripped off a series of radio transmission detections which confirm it is in the location that satellite studies and drift modeling have suggested.

“WSPR is like a bunch of tripwires or laser beams, but they work in every direction over the horizon to the other side of the globe,” Mr. Godfrey says.

“JORN, the Jindalee Operational Radar Network (JORN) or any Over-The-Horizon-Radar is similar to WSPR, it also uses HF radio waves that bounce off the ionosphere and is effectively a very sophisticated tripwire detection system.”

This new report is new evidence of the location of MH370. It is quite simply a third way of tracking and confirming MH370’s location.

The theory is dependent upon miniscule deviations in the S/N ratio of the path (1 – 3 Hz). Mr. Godfrey’s theory is that recorded deviations (“anomalies”) in the S/N and the frequency shifts/drifts are related to radio wave interactions with aircraft some thousands of kilometers distant from either amateur radio station. The theory holds that MH370 crossed eight anomalous WSPR DX links during its transit of the Indian Ocean. These anomalies mirror the returns of the well-documented flight path analysis based on Inmarsat satellite data.

Mr. Godfrey, according to ***the Week***,

Although the engineer acknowledged he has “no evidence” and discussions of the pilot’s motive are at this stage merely “speculation”, he added: “To me, it is clear there is still certain information being withheld, principally by the Malaysian government.”

His theory has gained support. ***The Times*** said that Godfrey’s report is “by broad agreement the closest anyone has come so far to solving the world’s greatest aviation mystery” and [Airline Ratings](#) said his theory has received “expert support”.

Godfrey says his theory comes after laborious investigation, which saw him “plodding away for eight hours a day for seven years”. The Times described how he would “spend his days studying the data he had patiently accumulated on satellite communications, long-range radio signals, oceanic drift, underwater search technology and flight simulations”.

The area he now believes the plane crashed is a 40 nautical mile radius, far smaller than that in previous searches. “

OTH Signals

Heinrich Hertz demonstrated in 1886 that radio waves could be reflected from solid objects. In 1904 Christian Hülsmeier showed the feasibility of detecting a ship in dense fog using radio. Airplane scatter of radio waves had been discovered in 1930. Radio Detection And Ranging (RADAR) was first implemented in the UK in 1934 by Robert Watson Watt and Arnold Wilkins and a patent was granted a year later.

WSPR transmissions are made at high frequency (HF) mostly in the bands between 3 MHz and 28 MHz over large distances. The transmissions propagate the radio waves by reflecting or refracting the signals back towards the Earth from the ionosphere. Such skywave propagation can be used to communicate beyond the horizon, at intercontinental distances. *When an aircraft passes across the line of transmission, the signal is either enhanced or fades. This change will affect the received signal-to-noise ratio and can also cause the frequency of the received signal to drift.*

There are over 5,000 WSPR radio stations in the world. WSPR is a protocol first released in 2008 and developed by Prof. Joe Taylor (K1JT), who is a Nobel Prize Laureate for Physics and a distinguished Professor of Physics at Princeton University.

There were 70,122 WSPR links during the flight of MH370. There are 518 unique transmission paths that cross the area of interest around Malaysia, the Malacca Strait and the Indian Ocean.

Evidence exists that it may have been possible to detect and track MH370 throughout its flight. Several other aircraft in the vicinity of MH370 such as UAE343 and IGO053 were also regularly detected and tracked.

Conclusion

I am glad that we are now able to close the chapter about the fate of the *Endurance*. The families of these brave crew members deserve the recognition as explorers and adventurers.

The MH370 hunt is now supported by a new and exciting theory. Unfortunately, it is considered by many experts as being highly unlikely to yield any suitable results with the main problems being WSPR transmission power is too weak to detect reflections from an aircraft, and the effect of the ionosphere too difficult to account for the methodology employed in this narrative.

Personally, I hope they locate the remains of MH370 and the 229 souls that perished when the plane was lost. I don't have to fly this route anymore, but many others do and discovering the WHY of the plane's disappearance might help overcome justifiable jitters. Perhaps most importantly, locating the wreckage and discovering the truth might bring a sense of closure to the families and loved ones of the lost travelers.

73 AND GREAT DX!

Bob, K9RHY